New Combinations in *Schoenoplectus* (Cyperaceae)

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ABSTRACT. Results from a recent taxonomic treatment of species of *Scirpus* sensu lato occurring in Virginia indicate that they are a heterogeneous group. Three segregate genera are recognized as occurring in Virginia: *Scirpus* sensu stricto, *Trichophorum*, and *Schoenoplectus*. The transfer of four species to *Schoenoplectus* is made. These combinations are made prior to a treatment of Virginia *Scirpus* sensu lato forthcoming in the journal *Bartonia*.

A taxonomic study of *Scirpus* sensu lato (Strong, 1991) was recently completed for Virginia and is forthcoming in the journal *Bartonia* (Strong, in press). As a result of this study, four new combinations are needed in *Schoenoplectus*. This note states the taxonomic rationale and validates these new combinations so that they are available to other workers.

When *Scirpus* was described (Linnaeus, 1753), it was heterogeneous. Since then, many of the original species have been referred to other genera in Cyperaceae, e.g., *Eleocharis*, *Fimbristylis*, *Bulbostylis*, *Cyperus*, and *Scleria*. The remaining species, and others described since Linnaeus, were treated by many workers as homogeneous. This particularly applies to those species having imbricate floral bracts, hypogynous bristles, and achenes with an undifferentiated style base.

Embryological, anatomical, morphological, and cladistical evidence accumulated during the past 30 years indicates that many of the species still referred to *Scirpus* are heterogeneous (van der Veken, 1965; Schuyler, 1971a, b, 1972; Goetghebeur, 1986) and are better placed in segregate genera, with *Scirpus sylvaticus* L. designated as the type for *Scirpus* sensu stricto (Wilson, 1989).

The conclusions of my studies, based on morphological analysis as well as a review of embryological, anatomical, and cladistical studies, confirm that *Scirpus* sensu lato is a heterogeneous group. Species occurring in Virginia comprise three segregate genera: *Trichophorum*, *Scirpus* sensu stricto, and *Schoenoplectus*.

Goetghebeur & Simpson (1991), citing embryological and morphological evidence, argued that species of *Scirpus* sensu lato that are applied to the genus *Bolboschoenus* are significantly distinct from *Schoenoplectus* to warrant maintaining them in a separate genus. They argued that the one character that they recognize *Schoenoplectus* and *Bolboschoenus* as having in common (embryo morphology) cannot justify placing them together. My studies conclude that there are not only similarities between embryo shape, but between leaf anatomy, floral morphology, and inflorescence. The morphological characters that are usually emphasized as distinguishing *Bolboschoenus* and *Schoenoplectus* (well-developed cauline leaves and terminal inflorescence subtended by several involucral bracts of the former vs. usually undeveloped leaves and pseudolateral inflorescence bearing a single involucral bract of the latter) are not consistent within the two genera. Many species in *Schoenoplectus*, e.g., *S. etuberculatus*, *S. pungens*, *S. torreyi*, and *S. smithii*, produce well-developed, elongate blades and typically bear more than a single involucral bract, although they are sometimes reduced. The lowest involucral bract in *Bolboschoenus* is typically erect both at anthesis and in reduced forms, appearing as a continuation of the culm. Only at maturity does the inflorescence spread out and appear terminal. The Asian species *Schoenoplectus grossus*, which Goetghebeur and Simpson have applied to *Actinoscirpus*, has an inflorescence that appears terminal subtended by several involucral bracts as in *Bolboschoenus*, but the floral morphology is that of *Schoenoplectus*. Furthermore, another Asian species, *Bolboschoenus planiculmis*, has a pseudolateral inflorescence, the lower involucral bract appearing as a continuation of the culm as in *Schoenoplectus*, but the floral morphology is that of *Bolboschoenus*. Therefore, because these two groups share a number of significant characters, I cannot justify the separation of these plants into distinct genera.

Schoenoplectus purshianus (Fernald) M. T. Strong, comb. nov. Basionym: *Scirpus purshianus* Fernald, Rhodora 44: 479. 1942, nom. nov. for *Scirpus debilis* Pursh, Fl. Amer. Sept. 1: 55. 1813, non *Scirpus debilis* Lamarck, Tabl. Encycl. 1: 141. 1791. *Scirpus erectus* var. *debilis* Camus, Fl. Gén. Indo-Chine 7:

136. 1912. *Schoenoplectus juncoides* subsp. *purshianus* (Fernald) Soják, Čas. Nár. Mus. Odd. Přír. 141: 62. 1972. TYPE: U.S.A. Pennsylvania: in wet meadows, *Herbarium Muhlenberg s.n.* (lectotype, as designated on sheet by Schuyler, PH not seen).

Schoenoplectus fluviatilis (Torrey) M. T. Strong, comb. nov. Basionym: *Scirpus maritimus* L. *β ? fluviatilis* Torrey, Ann. Lyceum Nat. Hist. New York 3: 324. 1826. *Scirpus fluviatilis* (Torrey) A. Gray, Manual Bot. N. United States: 527. 1848. *Bolboschoenus fluviatilis* (Torrey) Soják, Čas. Nár. Mus. Odd. Přír. 141: 62. 1972. TYPE: U.S.A. Missouri: banks of the Missouri River, *Baldwin s.n.* (lectotype, selected here, NY).

Schoenoplectus novae-angliae (Britton) M. T. Strong, comb. nov. Basionym: *Scirpus novae-angliae* Britton, Illus. Fl. 3: 509. 1898. *Scirpus campestris* var. *novae-angliae* (Britton) Fernald, Rhodora 8: 136. 1906. *Scirpus robustus* var. *novae-angliae* (Britton) Beetle, Amer. J. Bot. 29: 82. 1942. TYPE: U.S.A. Connecticut: Fairfield, in a freshwater marsh bordering creek, tidewater setting back to this point, *Eames*, 19 July 1896 (holotype, NY; isotypes, NY, US).

Scirpus maritimus γ cylindricus Torrey, Ann. Lyceum Nat. Hist. New York 3: 325. 1836. Syn. nov. *Scirpus cylindricus* (Torrey) Britton, Trans. New York Acad. Sci. 11: 79. 1892, nom. illeg., non *Scirpus cylindricus* (Vahl) Lamarck, Encyl. Method. Vol. 5 (suppl.): 101. 1817. *Scirpus subterminalis* var. *cylindricus* (Torrey) T. Koyama, Canad. J. Bot. 40: 930. 1962. TYPE: U.S.A. Georgia: *Baldwin s.n.* (holotype, PH; spikelet of type, NY).

Schoenoplectus robustus (Pursh) M. T. Strong, comb. nov. Basionym: *Scirpus robustus* Pursh, Fl. Amer. Sept. 1: 56. 1816 (based on *Scirpus maritimus β macrostachyos* Michaux, Fl. Amer. 1: 32. 1803, non *Scirpus macrostachyos* Lamarck, Tabl. Encycl. 1: 142. 1791). *Scirpus maritimus* var. *robustus* (Pursh) Kükenthal, Repert. Spec. Nov. Regni. Veg. 23: 200. 1926. *Bolboschoenus robustus* (Pursh) Soják, Čas. Nár. Mus. Odd. Přír. 141: 63. 1972. TYPE: U.S.A. Carolina: in salt marsh, *Herbarium Michaux s.n.* (lectotype, selected by Schuyler (Ewan, 1979), P not seen).

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